# Balancing Digestion for Total Body Health

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# Digestive Illness in the USA

- 35 visits to a doctor for every 100 people for digestive concerns
- 8% of us have chronic digestive diseases
- 6% have acute digestive episodes
- 43% have intermittent digestive issues
- 43% of us have no digestive issues

NIDDK, healthguidance.org

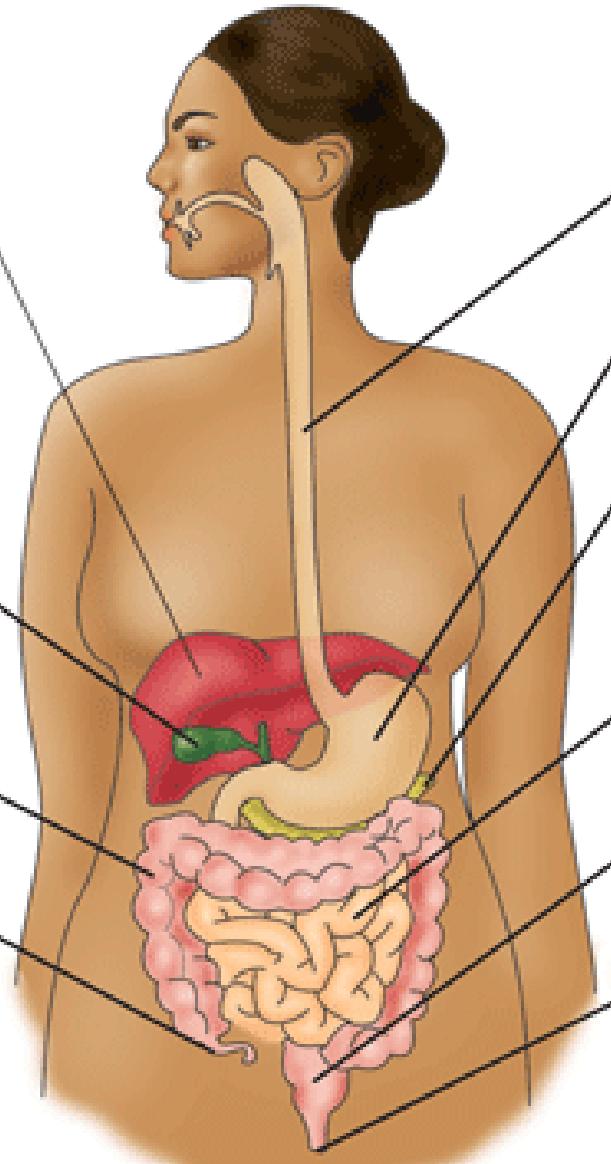
# Digestive Diseases

- Irritable Bowel Syndrome
- Chronic Constipation
- Heartburn/Gastroesophageal Reflux Disease
- Inflammatory Bowel Disease
- Cancers
- Ulcers
- Liver Diseases
- Gallbladder issues
- Diverticular Disease
- Pancreatic Diseases

# Digestion Related Conditions

- Migraine Headaches
- Fibromyalgia
- Interstitial Cystitis
- Arthritis
- Auto-Immune Conditions
- Depression/Anxiety
- Attention Deficit

# Digestive System



**Liver**
The largest organ inside the body. Makes bile (fluid that helps break down fats and gets rid of wastes in the body); changes food into energy; and cleans alcohol, some medicines, and poisons from the blood.

**Gallbladder**
Stores the bile made in the liver, then empties it to help digest fats.

**Large intestine**
Also called the colon. It absorbs water and sodium from stool.

**Appendix**
A pouch attached to the first part of the large intestine. No one knows its function.

**Esophagus**
Carries food from the mouth to the stomach.

**Stomach**
The organ where digestion of protein begins.

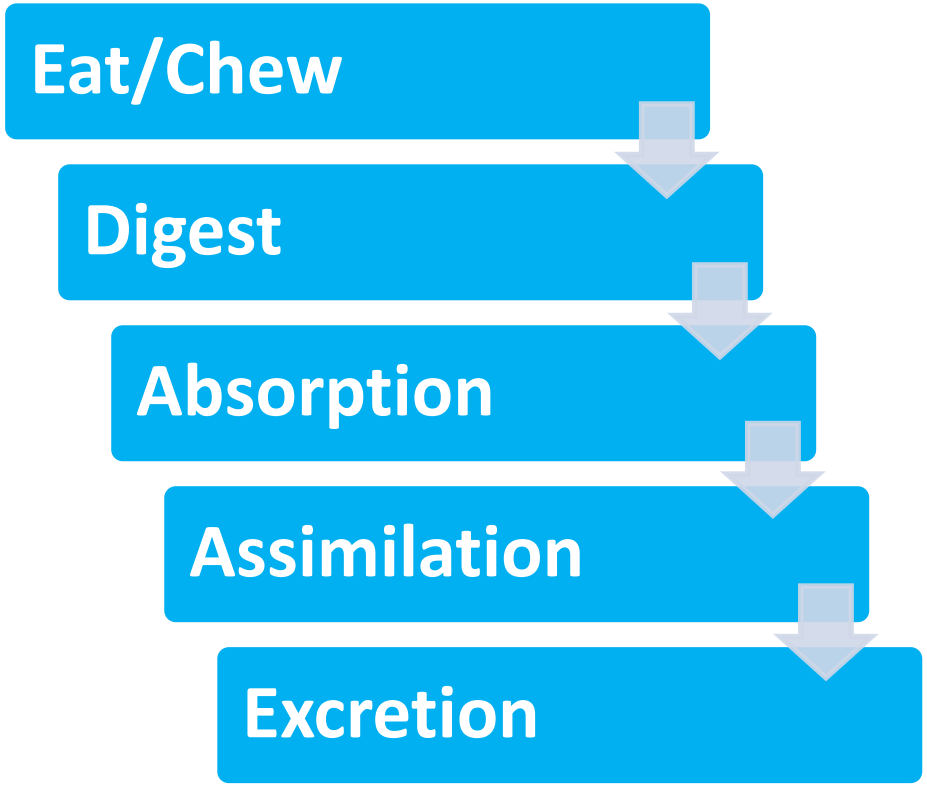
**Pancreas**
A gland that makes enzymes for digestion and the hormone insulin (which helps the body turn food into energy).

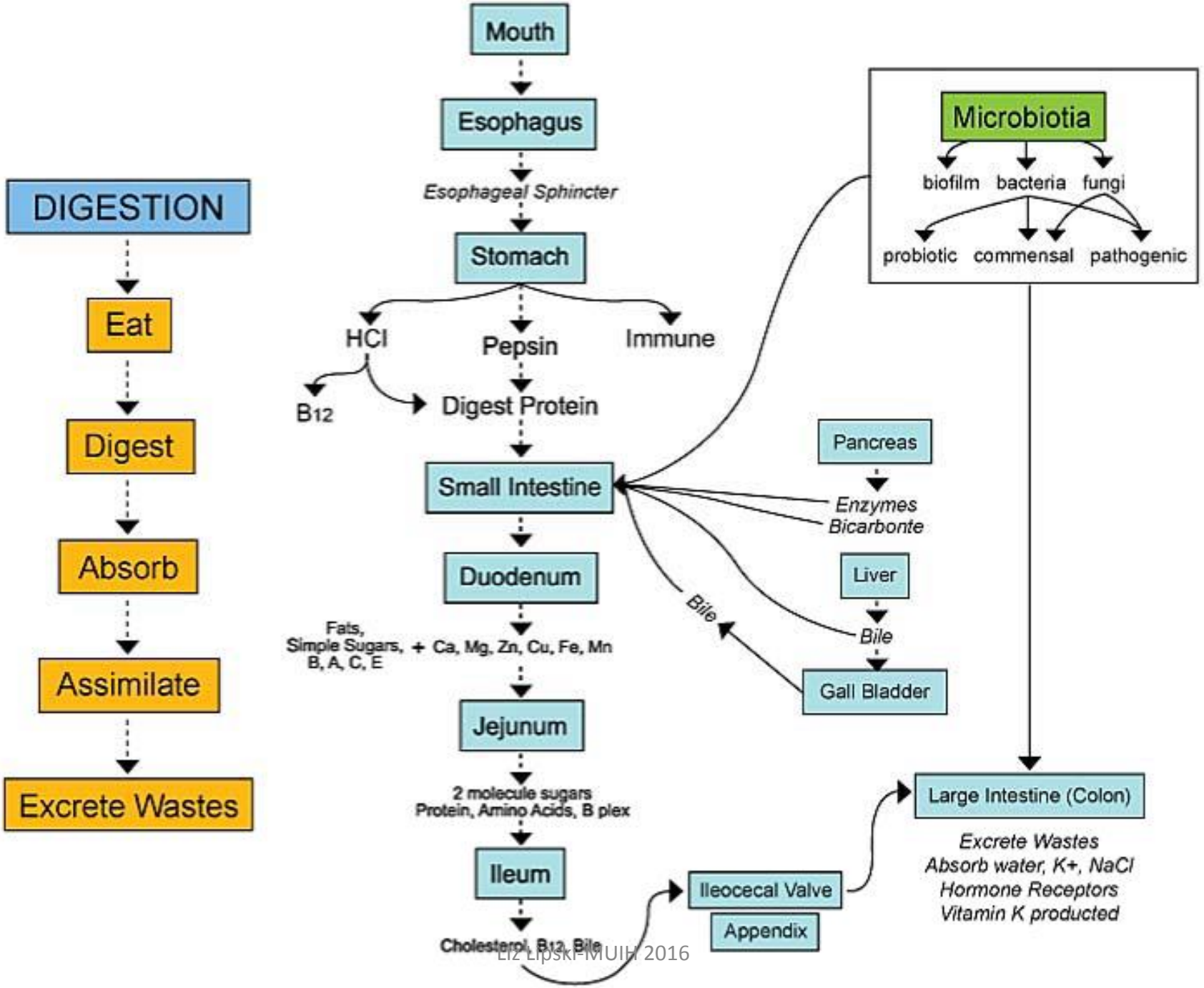
**Small intestine**
The organ where most digestion occurs.

**Rectum**
The lower end of the large intestine, leading to the anus.

**Anus**
The opening at the end of the digestive tract where bowel movements leave the body.

# Digestive Process




DIGESTION
Eat
Digest
Absorb
Assimilate
Excrete Wastes
Mouth
Esophagus
Esophageal Sphincter
Stomach
HCl
Pepsin
Immune
B12
Digest Protein
Small Intestine
Duodenum
Fats,
Simple Sugars,
B, A, C, E
+ Ca, Mg, Zn, Cu, Fe, Mn
Jejunum
2 molecule sugars
Protein, Amino Acids, B plex
Ileum
Cholesterol, B12, Bile
Ileocecal Valve
Appendix
Microbiotia
biofilm
bacteria
fungi
probiotic
commensal
pathogenic
Pancreas
Enzymes
Bicarbonte
Liver
Bile
Gall Bladder
Bile
Large Intestine (Colon)
Excrete Wastes
Absorb water, K+, NaCl
Hormone Receptors
Vitamin K producted

# Food is Medicine

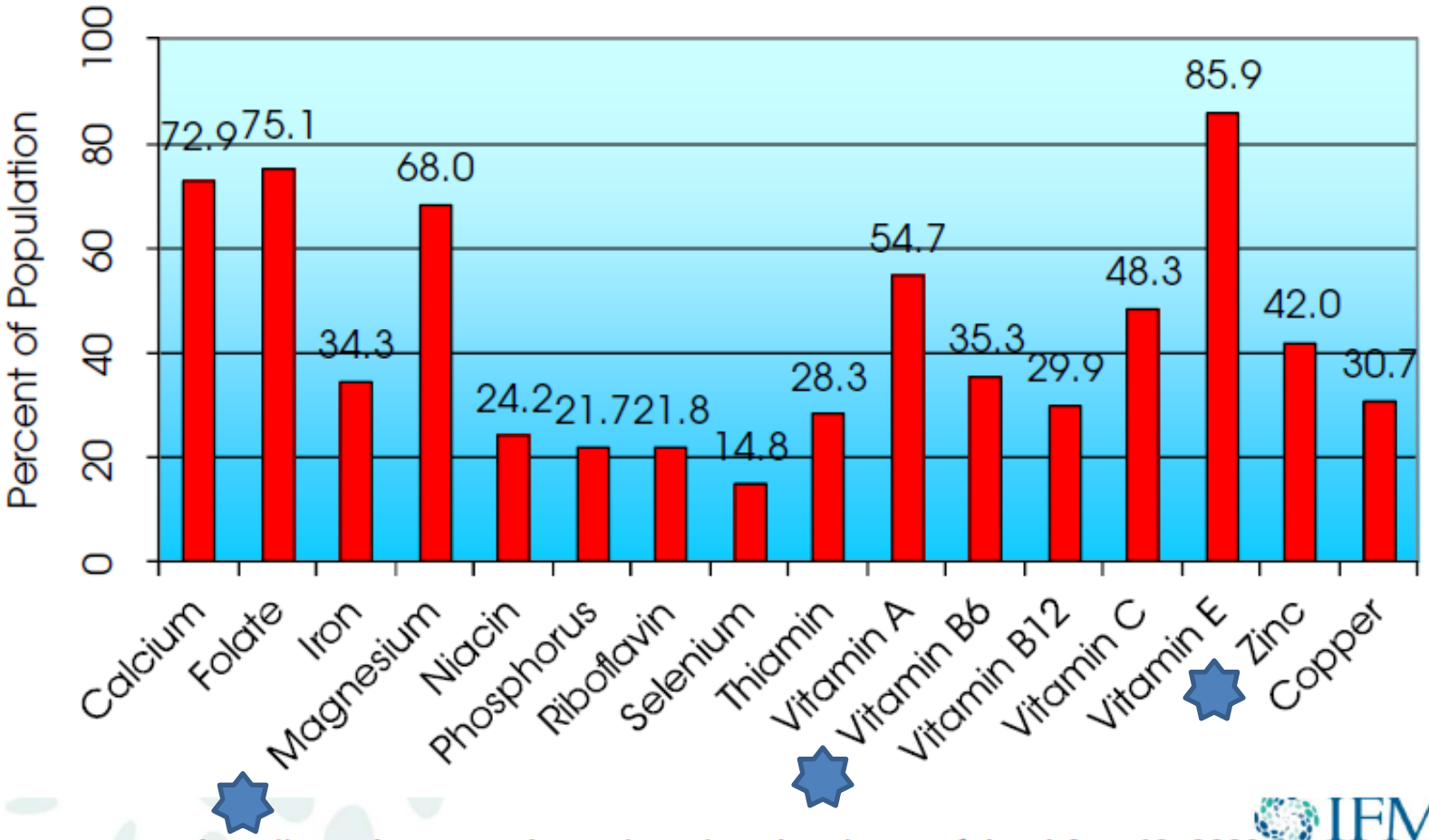
"The food you eat can be either the safest and most powerful form of medicine, or the slowest form of poison."

Ann Wigmore

# Diet Changes

- Modern agriculture
- Food industry
- Average diet is deficient
- Where we eat
- Who we eat with
- What we eat
- Harmony of food
- Easy, convenient, fast

# Percent of U.S. Population NOT Meeting the Dietary Reference Intake (DRI) for Specific Nutrients




http://www.ba.ars.usda.gov/cnrg/services/cnmapfr.html Aug 10, 2009

IFM

# Krebs Cycle

B1, B1, B3, B6,

Lipoic Acid,

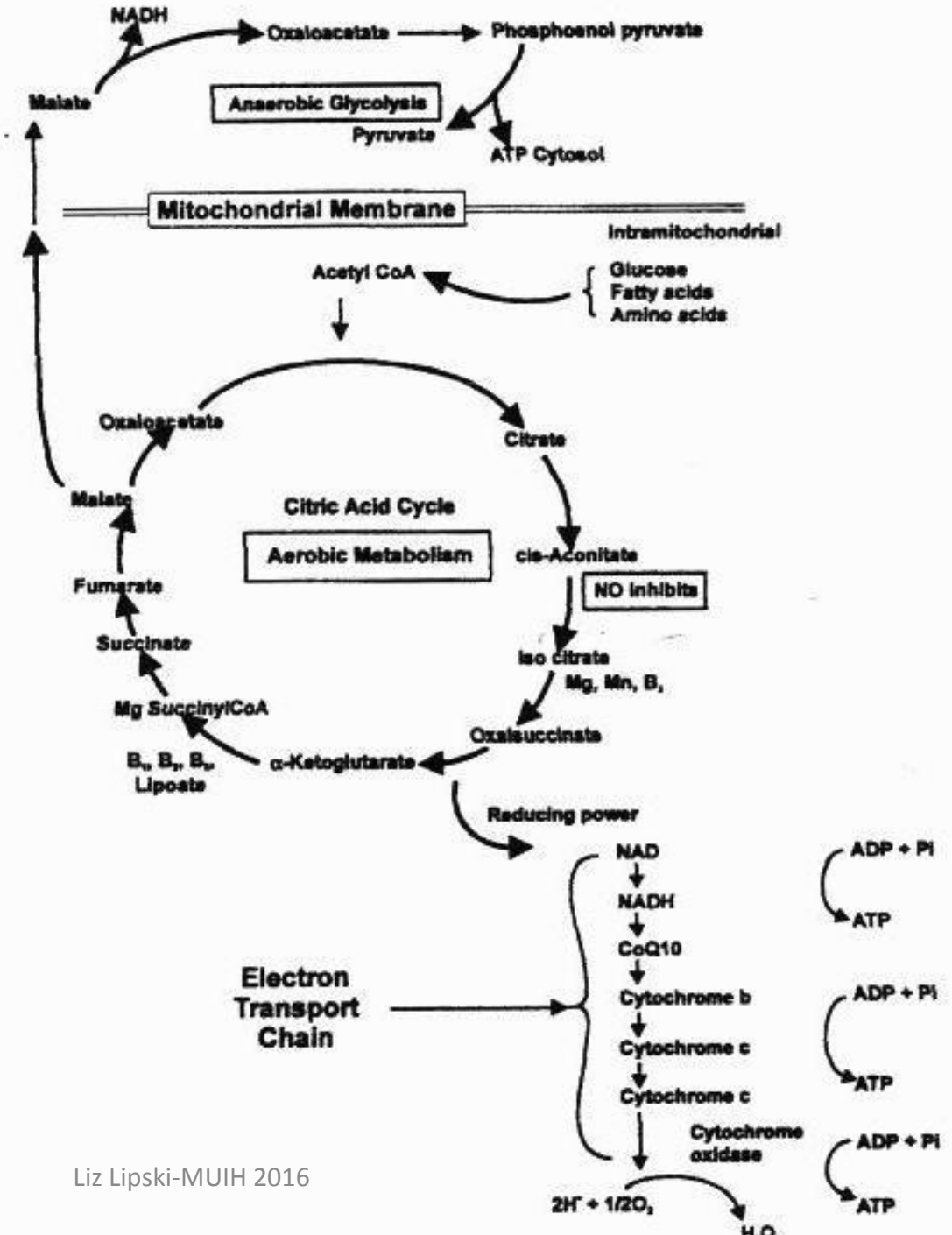
Mg, Mn, Zn,

CoQ10,

Glucose

Fatty acids

Amino acids




Food is Information

# Fast Food Consumption

- 26.5% of adults eat at fast food restaurants.
- Fast foods contributed more than one third of total calorie intake.
- Lower levels of vitamin A, carotenoids, vitamin C, calcium, magnesium, fruits, and vegetables.
- Increased intake of soft drinks.

Bowman SA, Vinyard BT. J Am Coll Nutr. 2004;23:163-168.

# Increase in intranuclear nuclear factor κB and decrease in inhibitor κB in mononuclear cells after a mixed meal: evidence for a proinflammatory effect[1–3]

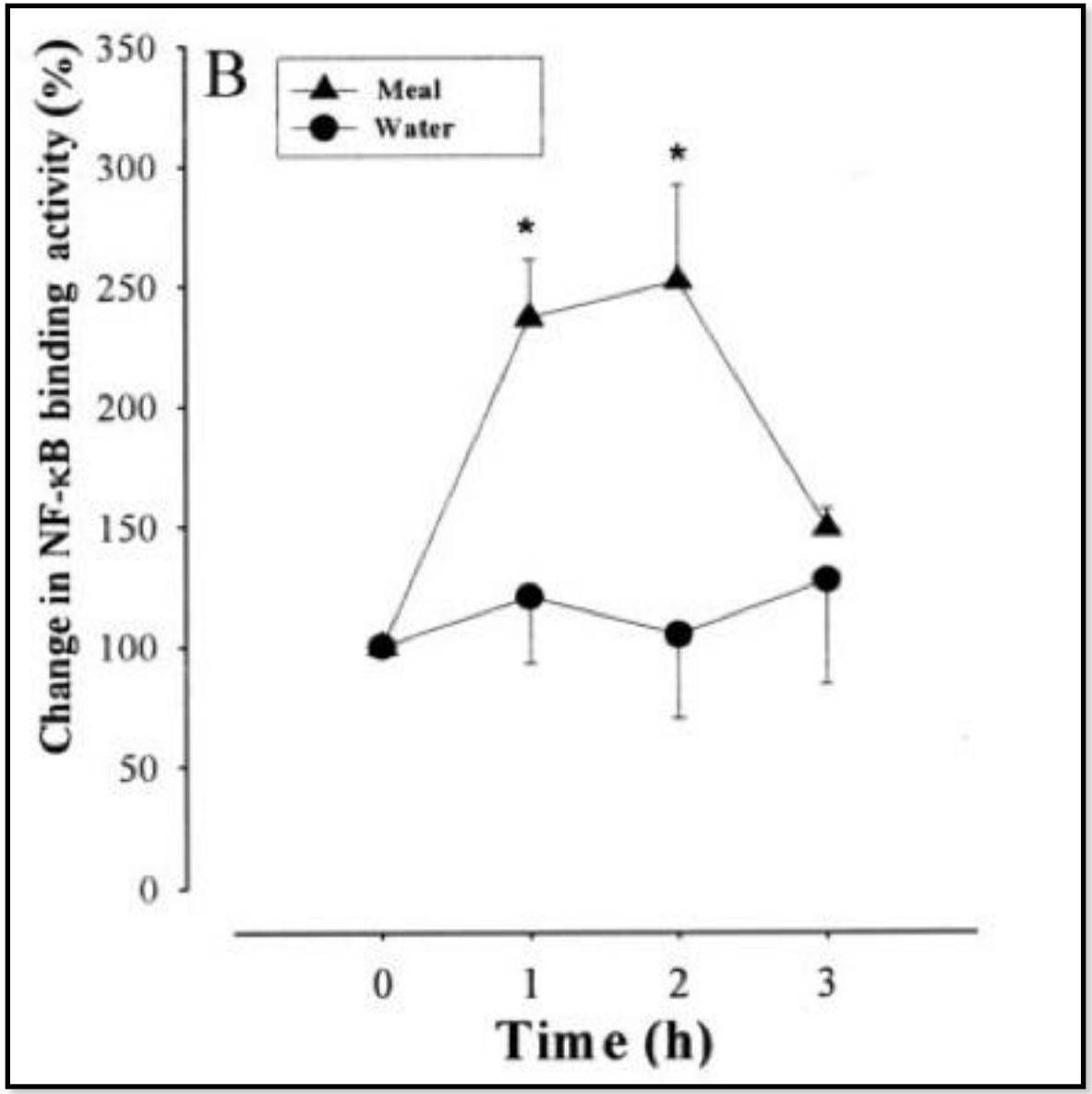
*Ahmad Aljada, Priya Mohanty, Husam Ghanim, Toufic Abdo, Devjit Tripathy, Ajay Chaudhuri, and Paresh Dandona*

**ABSTRACT**

**Background:** In view of the s
tive oxygen species (ROS) ger
ity that a mixed meal stimula
duces concomitant proinflamm
**Objective:** The objective was
900-kcal mixed meal induces
leukocytes and an inflammato
**Design:** Nine normal-weight s
meal, and 8 normal-weight sul
an overnight fast. Blood samp
ROS generation by mononucl
kocytes and the expression of
tranuclear nuclear factor κB (N
inhibitor κBα (IκBα), IκB k
(IKKβ) were measured. Plasm
(CRP) and soluble intercellula
sured.
**Results:** ROS generation by
nuclear leukocytes and p47[phc
The expression of IKKα and IKKβ and DNA-binding activity of
NF-κB increased significantly, whereas IκBα expression decreased.

(PMNLs) at 2 h, whereas cream (lipid) produces a peak at 1 h. The
ith glucose,
other hand,
eroxidation.
that a 48-h
n by leuko-
, we suggest
f ROS gen-
of obesity
marked ox-
es of lipid
damage of
tion over a
al food, but
ertaken our
effect of a
d fats. Such
n-mediated
, Ceriello et
al (7) showed an increase in oxidative stress and LDL oxidation
in diabetes after a meal challenge.

A fasting blood sample was obtained, and the subjects were asked to eat a mixed meal containing 910 kcal (egg-muffin and sausage-muffin sandwiches and 2 hash browns, which contained 81 g carbohydrate, 51 g fat, and 32 g protein) over 15 min.


B
Meal
Water
Change in NF-κB binding activity (%)
350
300
250
200
150
100
50
0
*
*
0
1
2
3
Time (h)

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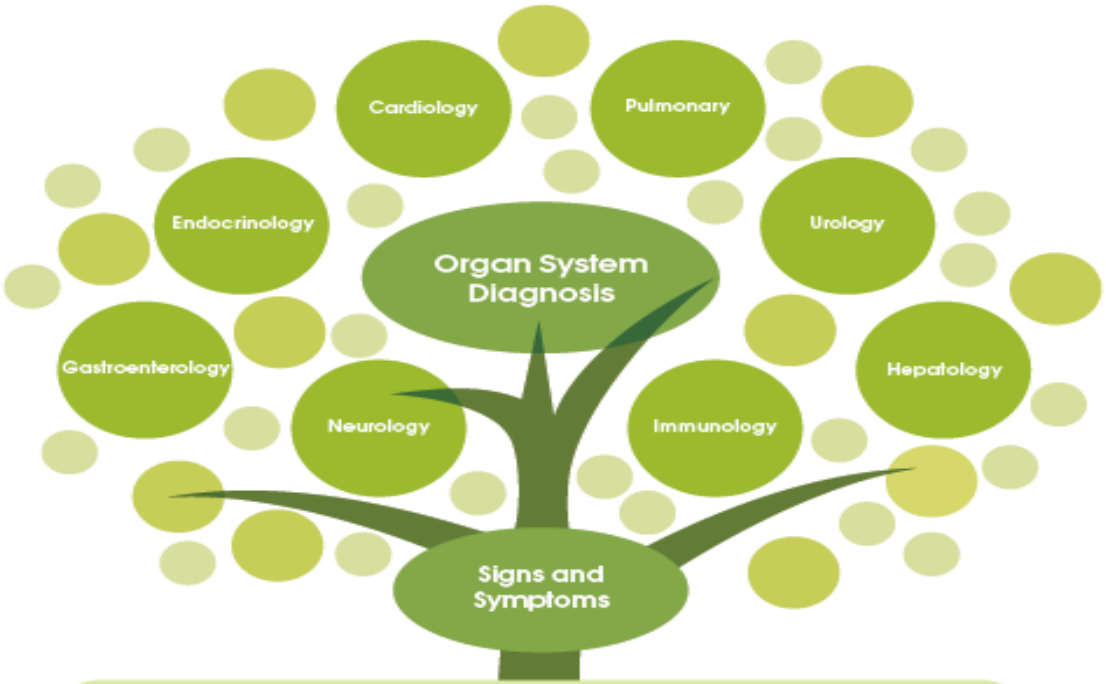
# THE FUNCTIONAL MEDICINE TREE




## The Fundamental Organizing Systems and Core Clinical Imbalances

**Assimilation**
*Digestion, Absorption, Microbiota/GI, Respiration*

**Defense and Repair**
*Immune system, Inflammatory processes, Infection and microbiota*

**Energy**
*Energy regulation, Mitochondrial function*

**Biotransformation and Elimination**
*Toxicity, Detoxification*

**Communication**
*Endocrine, Neurotransmitters, Immune messengers, Cognition*

**Transport**
*Cardiovascular, Lymphatic systems*

**Structural Integrity**
*From the subcellular membranes to the musculoskeletal system*

## Antecedents, Triggers, and Mediators

**Mental, Emotional, Spiritual Influences** ◄► **Genetic Predisposition** ◄► **Experiences, Attitudes, Beliefs**

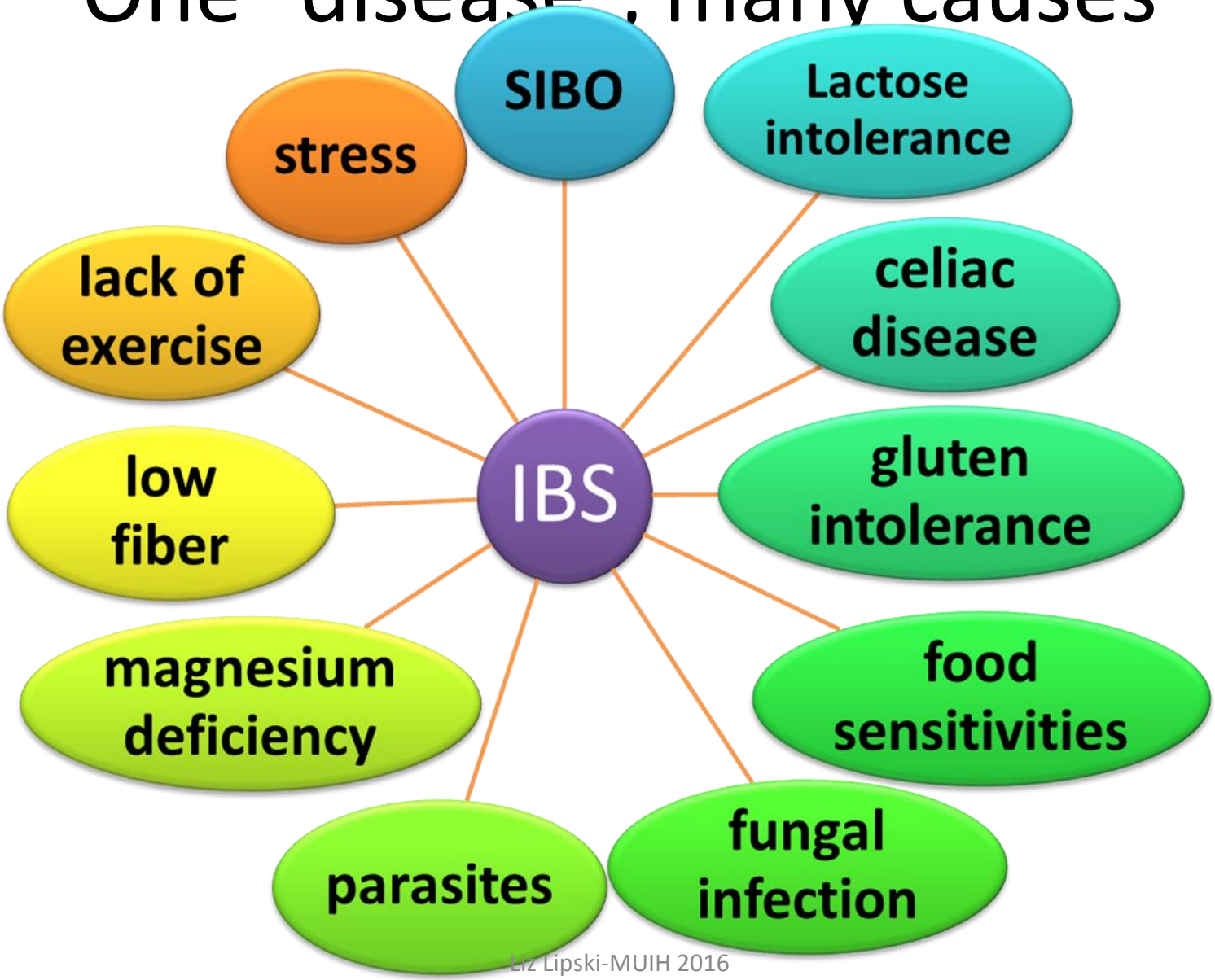
Sleep & Relaxation
Exercise/ Movement
Nutrition/ Hydration
Stress/ Resilience
Relationships/ Networks
Trauma
Micro-organisms
Environmental Pollutants

## Personalizing Lifestyle and Environmental Factors

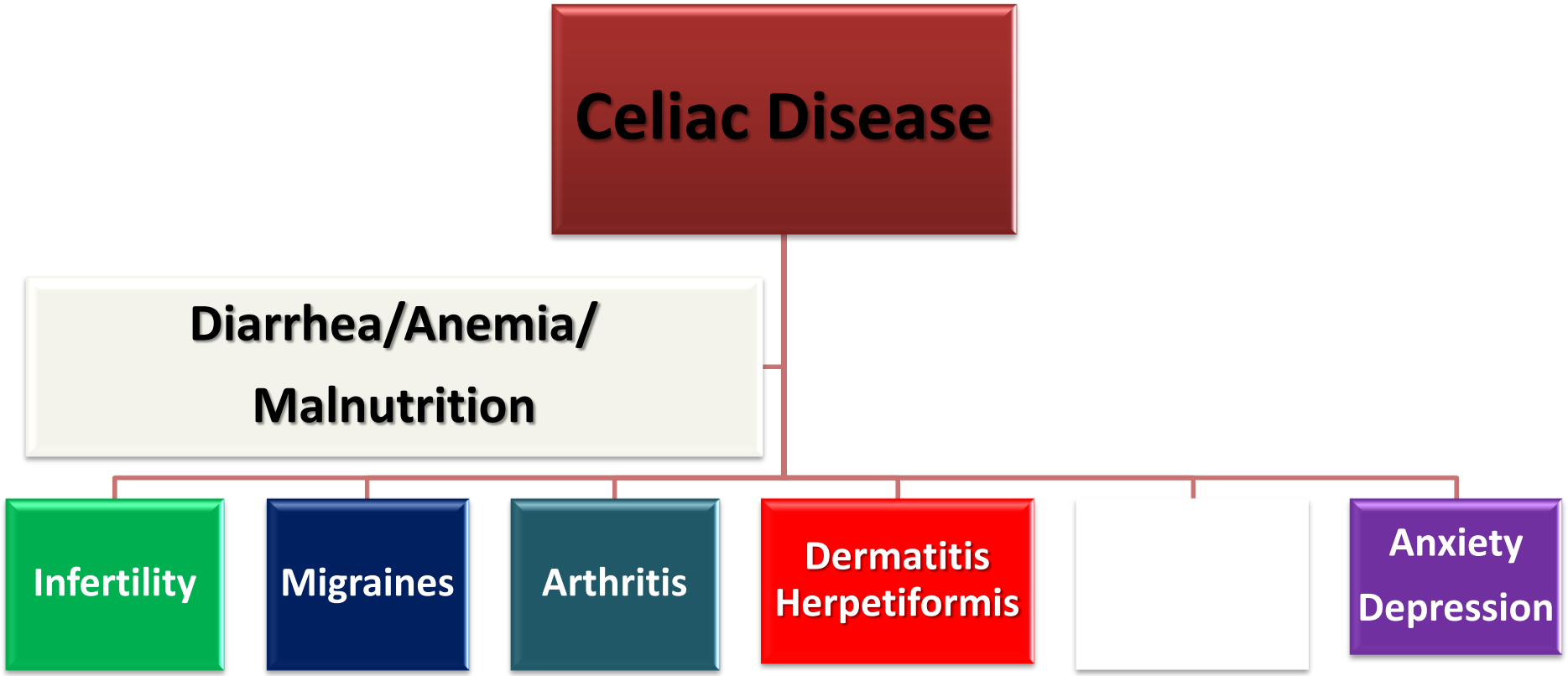
# DIGIN

- **D**igestion/Absorption
- **I**ntestinal Permeability
- **G**ut Microbiota/Dysbiosis
- **I**nflammation/Immune
- **N**ervous System

# One “disease”, many causes



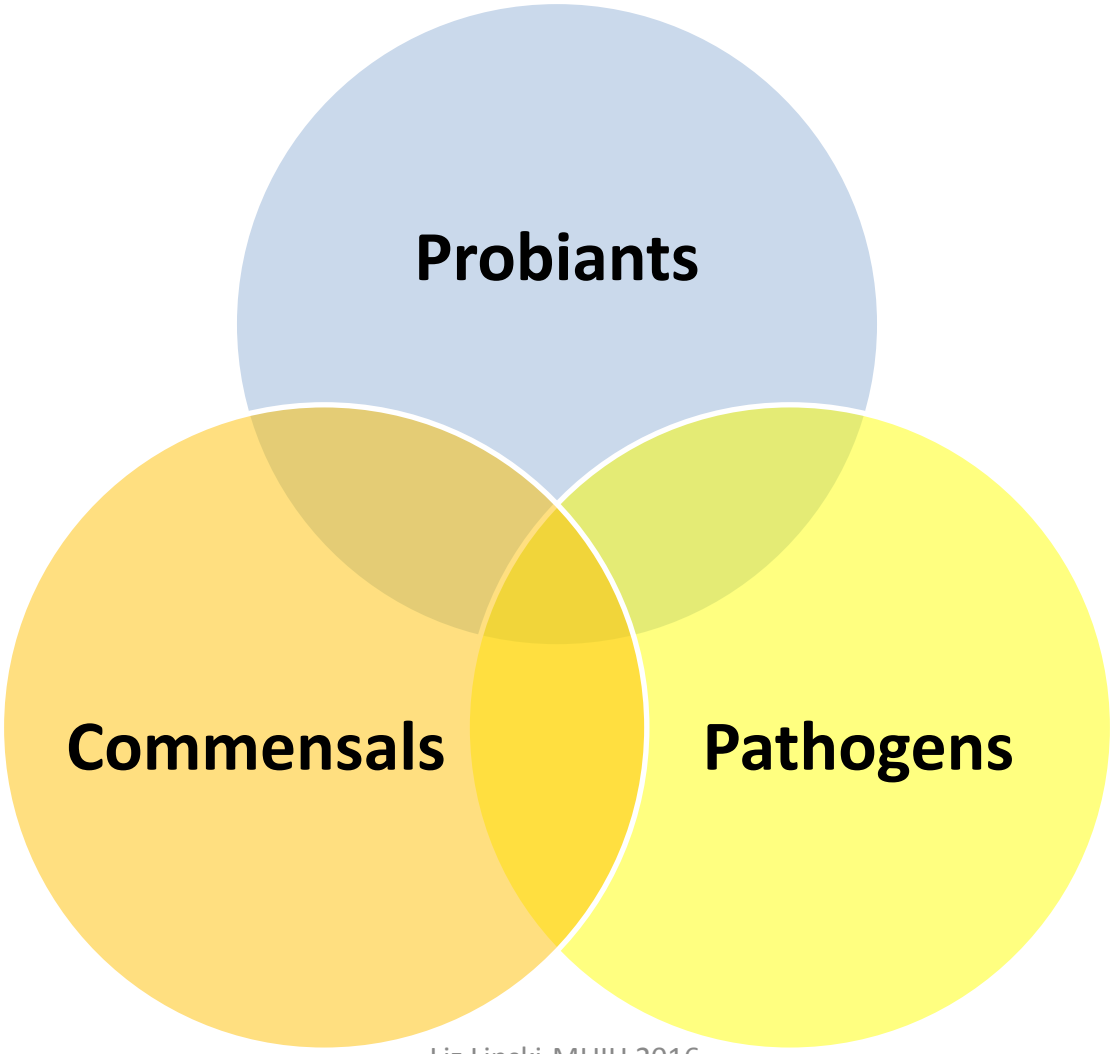
# One Disease, Many Presentations



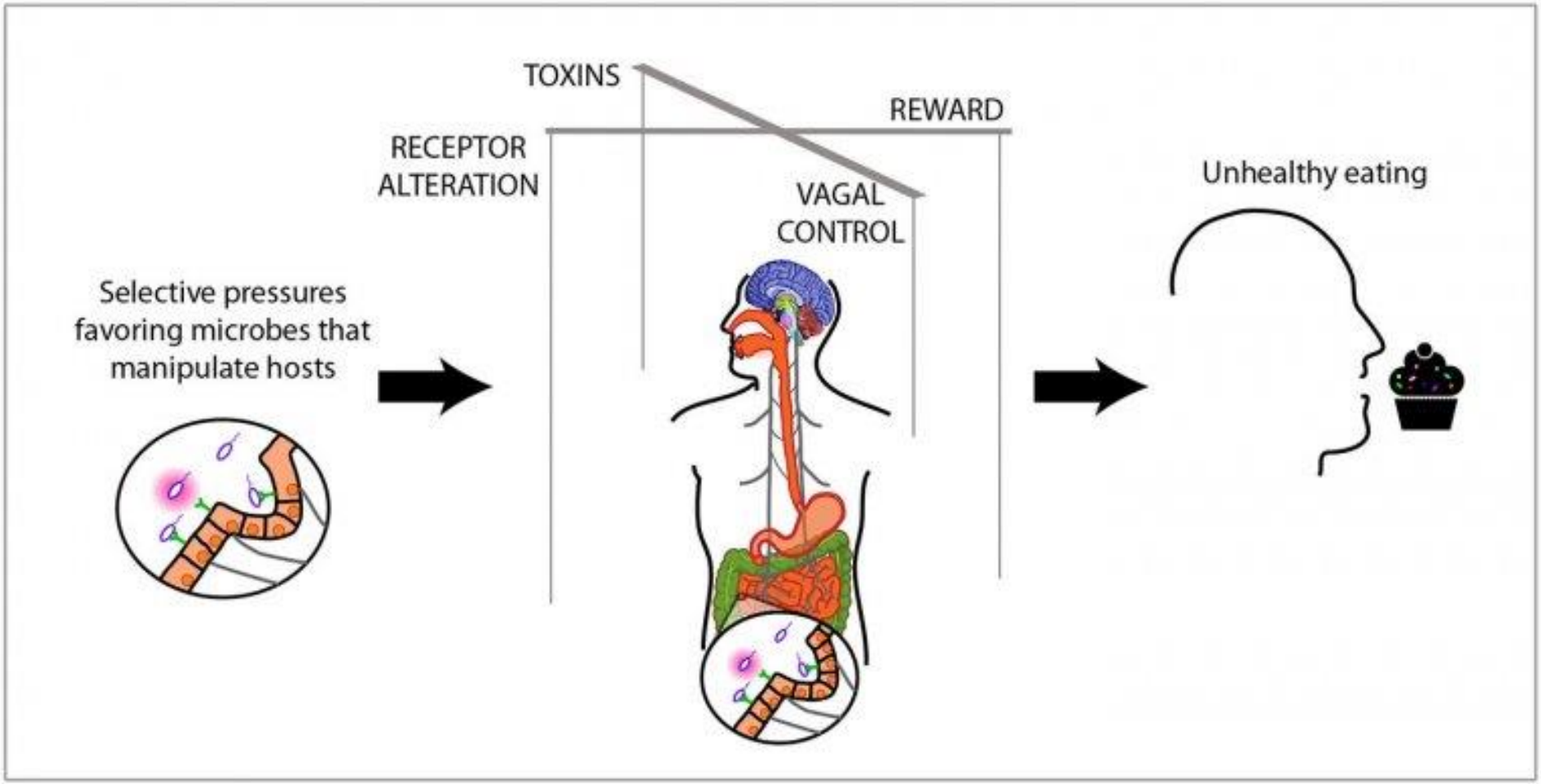
# Microbiome

- 2-6 pounds of microbes live on our epithelial surfaces
- Microbes outnumber human cells 10/1
- Microbial DNA: Human DNA = 150/1
- 10,000 known species of commensals
- Each of us have between 200-1000 sp.
- Most cannot be cultured

# Microbiota = Bacteria Viruses Fungi



# Does your microbiome tell you what to eat?

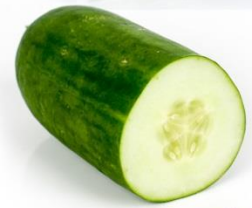



Aktipis, A. USCF news.edu/2014/08/116526/do-gut-bacteria-rule-our-minds

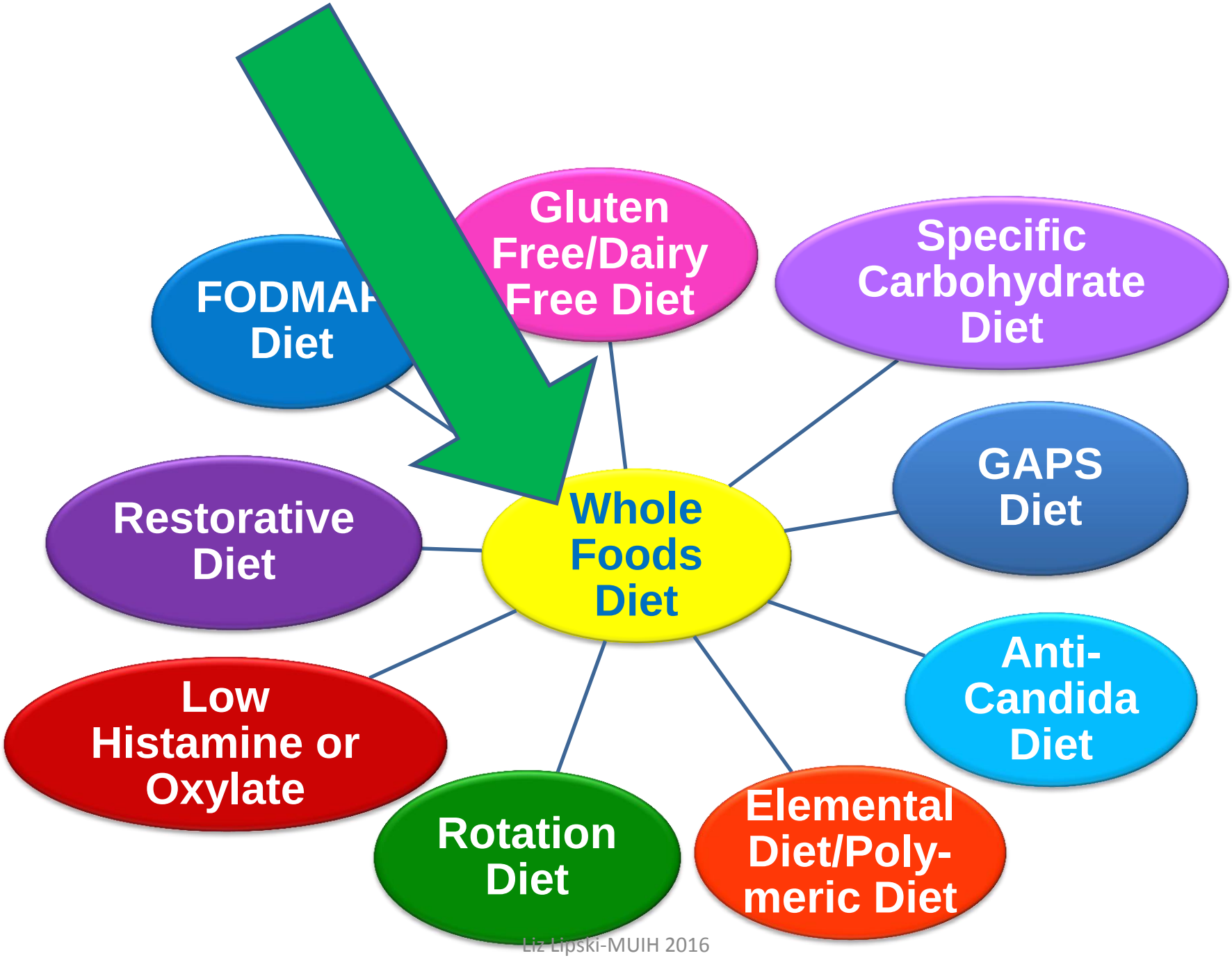
# Diet and Microbiome

"Diet has the most powerful influence on gut microbial communities in healthy human subjects."

About 75% of the food in the Western diet is of limited or no benefit to the microbiota in the lower gut. Most of it, comprised specifically of refined carbohydrates, is already absorbed in the upper part of the GI tract, and what eventually reaches the large intestine is of limited value, as it contains only small amounts of the minerals, vitamins and other nutrients necessary for maintenance of the microbiota.



Bengmark S. "Nutrition of the Critically Ill: a 21st-Cent perspective"
*Nutrients* **2013**, *5*, 162-207


Gluten Free/Dairy Free Diet
Specific Carbohydrate Diet
FODMAP Diet
GAPS Diet
Restorative Diet
Whole Foods Diet
Anti-Candida Diet
Low Histamine or Oxylate
Rotation Diet
Elemental Diet/Poly-meric Diet

JECH Online First, published on March 31, 2014 as 10.1136/jech-2013-203500



OPEN ACCESS

# Fruit and vegetable consumption and all-cause, cancer and CVD mortality: analysis of Health Survey for England data

Oyinlola Oyebode, Vanessa Gordon-Dseagu, Alice Walker, Jennifer S Mindell

► Additional material is published online only. To view please visit the journal online (http://dx.doi.org/10.1136/jech-2013-203500)

**ABSTRACT**

**Background** Governments worldwide recommend daily consumption of fruit and vegetables. We examine whether this benefits health in the general population

two portions of fruit (150 g per portion) and five portions of vegetables (75 g per portion) daily (675 g, equivalent to 8.5 UK portions).

In recent years, there has been some controversy

Eating at least seven daily portions was linked to a 42% lower risk of death from all causes and from cancer and heart disease/stroke of 25% and 31%, respectively, after excluding deaths within the first year of the monitoring period.

consumption was apparently associated with increased mortality (1.17 (1.07 to 1.28) per portion).

**Conclusions** A robust inverse association exists between fruit and vegetable consumption and mortality, with benefits seen in up to 7+ portions daily. Further investigations into the effects of different types of fruit and vegetables are warranted.

are likely to be health conscious. EPIC includes a large proportion of people who are likely to be health conscious, for example those recruited via blood donations, mammography screening, health insurance programmes, and the Oxford contingent, which was recruited through vegetarian and vegan societies and magazines.[23] Recent debate has highlighted that there are many confounders associated

bles, based on evidence that higher levels were protective against cardiovascular disease (CVD) and

general population. In addition, some constituents of fruit and vegetables may have different effects in

Oyebode, O. (2014). Fruit and vegetable consumption and all-cause, cancer and CVD mortality: analysis of Health Survey for England data. *J Epidemiol Community Health*, *68*(9), 856-62. doi:10.1136/jech-2013-203500

# Polyphenols in food promote growth of Probiotic microbes

- Green tea
- Red wine
- Apples
- Onions
- Chocolate
- Panax ginseng

- > Lactobacilli
- > Bifidobacteria
- < pathogens

# Probiotic Rich Foods

- Yogurt/Kefir
- Miso
- Natto
- Tempeh
- Sauerkraut
- Kim chee
- Raw pickles
- Fermented anything
- Root and ginger beers
- Olives

- Honey
- Pulke
- Kombucha
- Fermented vegetables
- Buttermilk
- Raw whey
- Raw vinegars
- Fermented sausages
- Sourdough
- Essene bread
- Beer
- Wine

# Common Probiotic Supplements

- *Lactobacillus* sp.
  - *reuteri*
  - *casei*
  - *rhamnosus*
  - *Acidophilus*
  - *plantarum*
- *Streptococcus* sp

- *Bifidobacterium* sp.
  - *infantis*
  - *lactis*
  - *longum*
  - *breve*
  - *bifidum*
- *S. boulardii* (nonhuman)

# Probiotic Supplements

- Which organism to use?
- Which product?
- For what conditions?
- What dose?
- For how long?
- Any side effects to be aware of?
- Alive or Dead?

# Prebiotics

# SCFA Production in Colon

Prebiotic Foods → Bacterial Enzymes → SCFA

**Bifidobacteria**

**Butyric**

Proprionic

Valeric

# Prebiotic Rich Foods

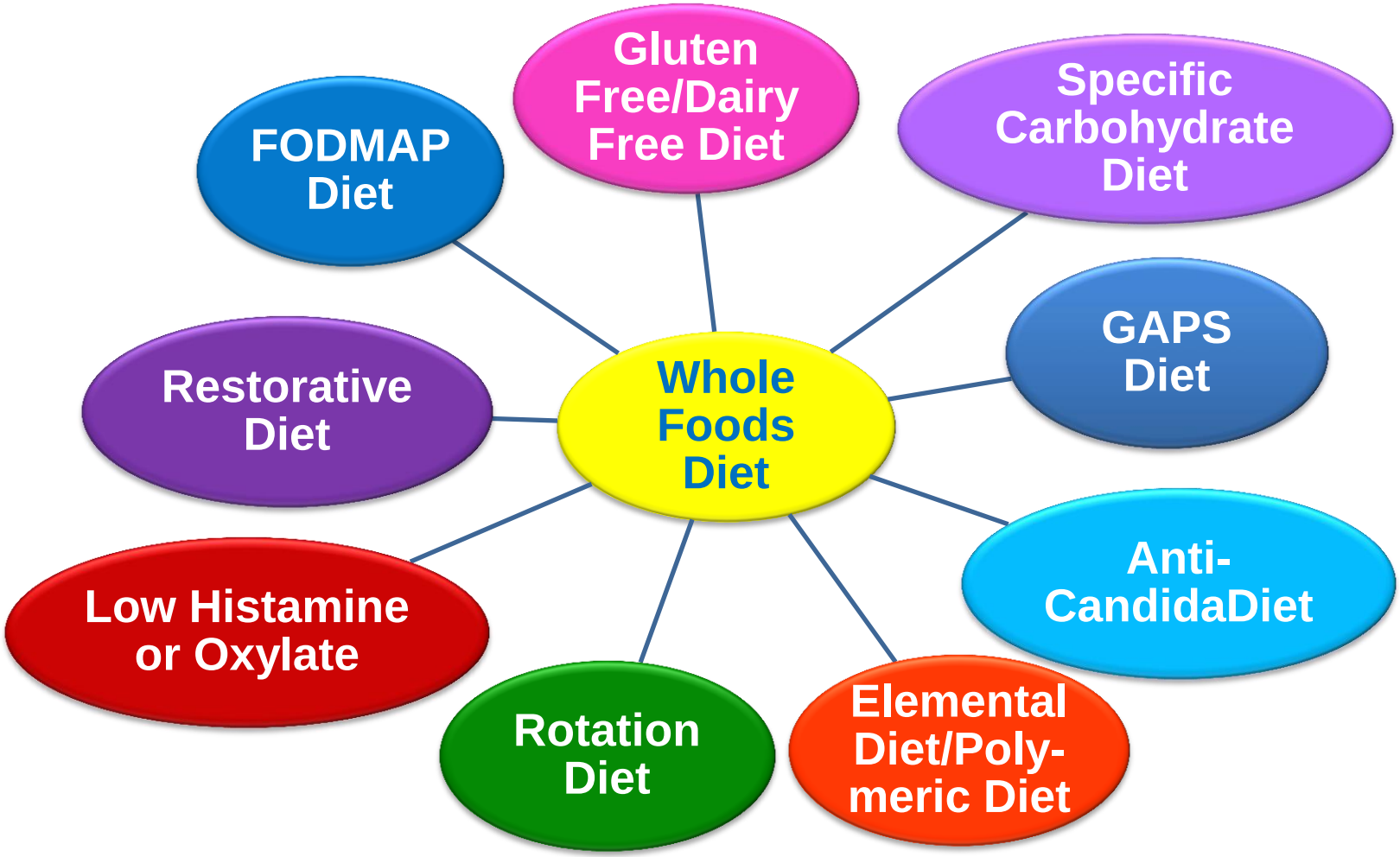
- Jerusalem artichokes
- Onions
- Chicory
- Garlic
- Leeks
- Bananas
- Fruit
- Soybeans
- Burdock root
- Asparagus
- Maple syrup/ sugar
- Chinese chives
- Peas
- Legumes
- Eggplant
- Honey
- Green Tea
- Yogurt, cottage cheese, kefir

# Rebalance Health with FOOD

# GI Healing Diets

- Enhance digestion and absorption
- Reduce inflammation
- Hypo allergenic (restricts proteins)
- Balance microbiota
- Heals a Leaky Gut
- Often limited to specific types of carbohydrates
- Reduces toxic burden

# GI Healing Diets

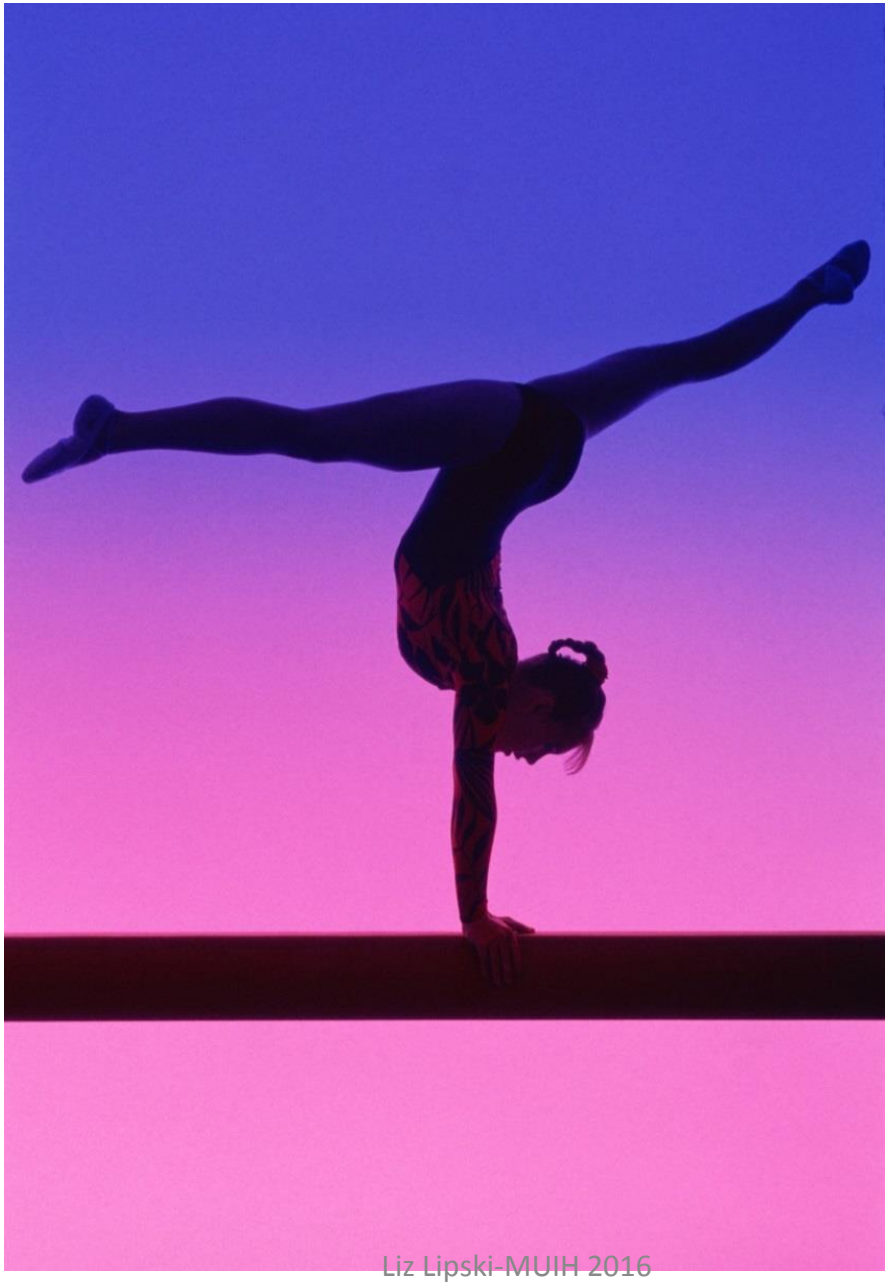


# Resources:

- Robynne Chutkan MD, *Microbiome Solution*
- Raphael Kellman MD, *The Microbiome Diet*
- Gerard E. Mullin, MD, *Gut Balance Revolution*
- Kathie Swift, MS, RD, *The Swift Diet*
- Tom Malterre, MS, CNS/A. Segersten, *The Elimination Diet, Whole Life Nutrition Cookbook*
- Sue Sheppard/Peter Gibson, www.FODMAP.com

  *The Complete Low FODMAP DIET*
- Donna Gates, *Body Ecology Diet*
- Natasha Campbell McBride, MD: *Gut & Psychology Syndrome*
- Elaine Gotschall PhD, *Breaking the Vicious Cycle*

www.breakingthe viscious cycle.info. *Breaking the Viscious Cycle, Grain-Free Gourmet*



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